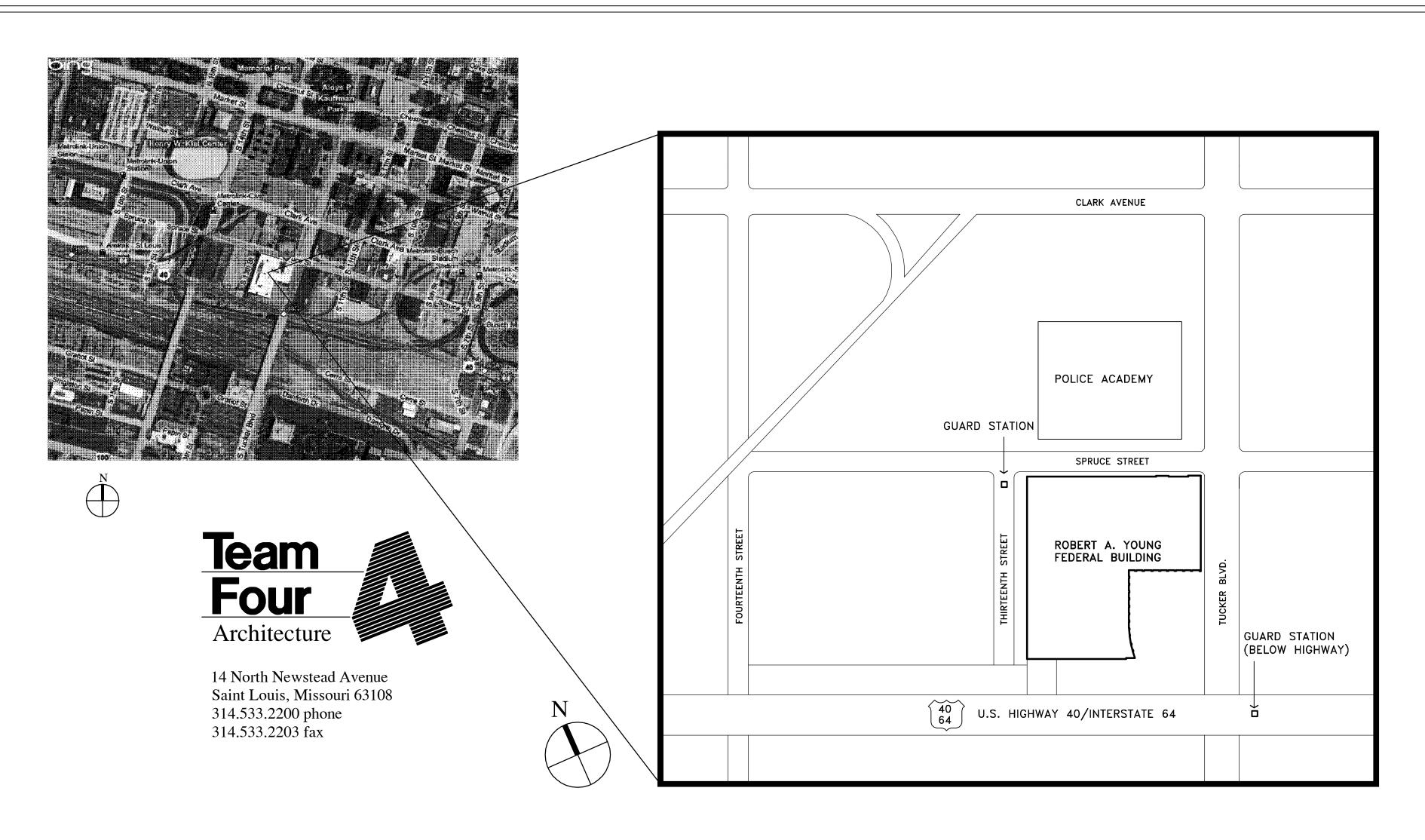


GSA PROJECT NUMBER: IMO00090 BUILDING NUMBER: MO0601AF

# RAY ARRA MECHANICAL WIND / PV PACKAGE

ROBERT A. YOUNG FEDERAL BUILDING 1222 SPRUCE STREET ST. LOUIS, MO 63103

# LOCATION MAP



# DRAWING INDEX - WIND / PV PACKAGE ONLY

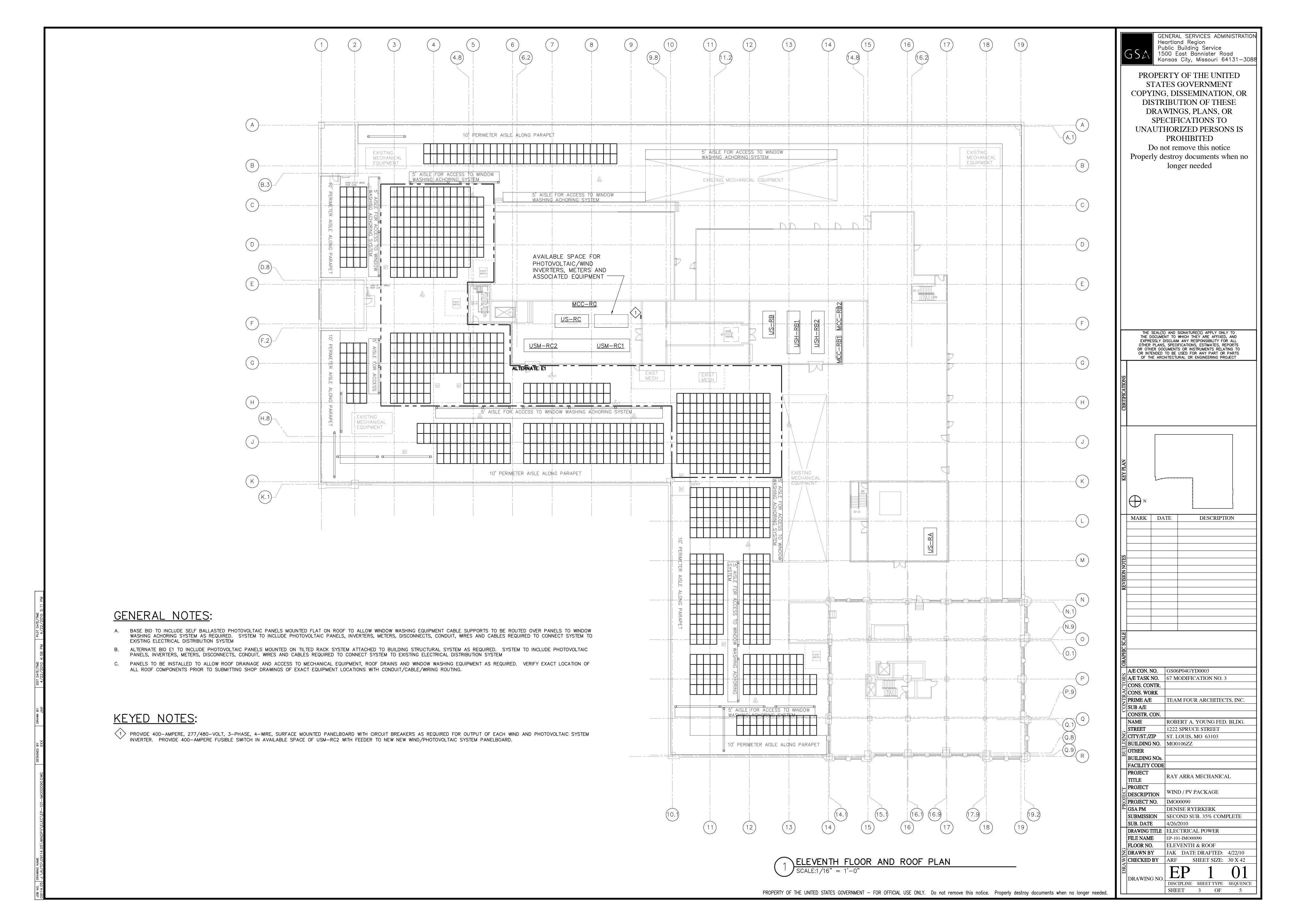
G-001	COVER SHEET
G-002	ENGINEERING SYMBOL SHEET
EP-101	ELECTRICAL POWER ELEVENTH FLOOR AND ROOF PLAN
EP-102	ELECTRICAL POWER PENTHOUSE ROOF PLAN
EP-601	WIND/PV SYSTEM ELECTRICAL ONE-LINE DIAGRAM

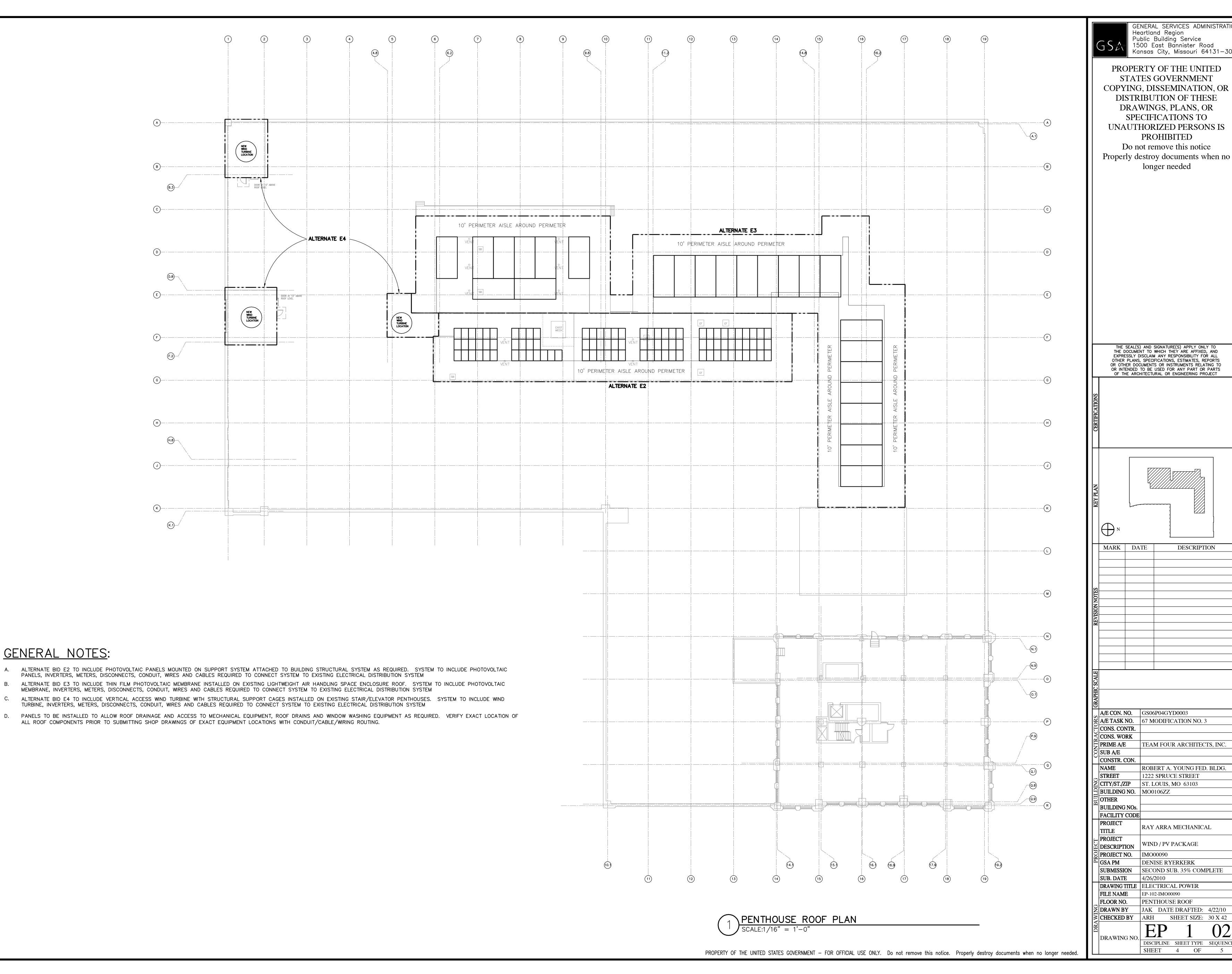
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PROPERTY OF THE UNITED STATES GOVERNMENT COPYING, DISSEMINATION, OR DISTRIBUTION OF THESE DRAWINGS, PLANS, OR SPECIFICATIONS TO UNAUTHORIZED PERSONS IS **PROHIBITED** Do not remove this notice Properly destroy documents when no longer needed THE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO THE PROPERTY OF THE PROPERT OR INTENDED TO BE USED FOR ANY PART OR PARTS
OF THE ARCHITECTURAL OR ENGINEERING PROJECT DESCRIPTION MARK DATE A/E CON. NO. | GS06P04GYD0003 A/E TASK NO. 67 MODIFICATION NO. 3 CONS. CONTR. **≦** CONS. WORK PRIME A/E TEAM FOUR ARCHITECTS, INC. SUB A/E CONSTR. CON. ROBERT A. YOUNG FED. BLDG. 1222 SPRUCE STREET ST. LOUIS, MO 63103 Z CITY/ST./ZIP BUILDING NO. | MO0106ZZ BUILDING NOs. FACILITY CODE RAY ARRA MECHANICAL - PROJECT WIND / PV PACKAGE **DESCRIPTION** PROJECT NO. IMO00090 DENISE RYERKERK SUBMISSION | SECOND SUB. 35% COMPLETE SUB. DATE 4/26/2010 DRAWING TITLE | COVER SHEET **FILE NAME** G-G001-IMO00090 FLOOR NO. Z DRAWN BY JAK DATE DRAFTED: 4/22/10 **EXECUTE SET SIZE:** 30 X 42 SHEET SIZE: 30 X 42 DRAWING NO. DISCIPLINE SHEET TYPE SEQUENCE SHEET 1 OF 5

GENERAL SERVICES ADMINISTRATION

### GENERAL SERVICES ADMINISTRATION Heartland Region Public Building Service 1500 East Bannister Road STANDARD ENGINEERING SYMBOLS Kansas City, Missouri 64131—3088 PROPERTY OF THE UNITED STATES GOVERNMENT COPYING, DISSEMINATION, OR DISTRIBUTION OF THESE DRAWINGS, PLANS, OR ABBREVIATIONS FOR ELECTRICAL EQUIPMENT POWER EQUIPMENT SPECIFICATIONS TO MOTOR - SEE EQUIPMENT DATA SCHEDULE UNAUTHORIZED PERSONS IS ELECTRICAL EQUIPMENT SHALL BE MOUNTED AT HEIGHTS INDICATED IN PLUG FUSE AND SWITCH COMBINATION, 120 VOLT MAX. SPECIFICATIONS, SYMBOL SCHEDULES, HEIGHTS MARKED AT OUTLETS, PROHIBITED FUND DISCONNECT SWITCHES - FUSED AND NON-FUSED AND AS FOLLOWS: HEIGHTS ARE TO CENTERLINES OF DEVICES. Do not remove this notice WIRING DEVICE SUBSCRIPTS STARTERS (MANUAL, MAGNETIC & COMB. STARTER-DISC.) Properly destroy documents when no PANELBOARD (SEE PANEL NUMBERING SCHEME) E DEVICE ON EMERGENCY CIRCUIT longer needed CONTROL CABINET OR PWCP EQUIPMENT OUTLET. FINAL TERMINATION METHOD AND EXACT LOCATION TO BE DETERMINED FROM EQUIPMENT MANUFACTURER'S THERMOSTAT AND EOL (END OF LINE) PILOT LIGHT SHOP DRAWINGS. EX EXISTING DEVICE TO REMAIN PIPE WITH ELECTRIC HEAT TRACING S SURFACE MOUNTED DEVICE ELECTRIC HEATING EQUIPMENT CIRCUIT BREAKER - INDIVIDUALLY MOUNTED ELECTRIC RADIANT HEATING PANEL MISCELLANEOUS ABBREVIATIONS TRANSFORMER (XFMR) AUTOMATIC DATA PROCESSING MANUAL TRANSFER SWITCH AUTOMATIC TRANSFER SWITCH CIRCUIT BREAKER NORMALLY CLOSED CONTROL CONTACTOR NORMALLY OPEN CLOSED CIRCUIT TELEVISION PULL BOX PREWIRED CONTROL PANEL DUSTTIGHT (NEMA 5) ELECTRICALLY OPERÁTED ROUGH-IN ONLY RAINTIGHT (NEMA 3R) FLEXIBLE CONDUIT ONE-LINE DIAGRAM FIELD DATA PANEL SWITCHBOARD FULL LOAD AMPERES FUSIBLE SWITCH DRAWOUT POWER CIRCUIT BREAKER (FRAME/TRIP) GROUND BUS GROUND FAULT TELEVISION SYSTEM GALVANIZED RIGID STEEL UNDERGROUND CIRCUIT BREAKER (FRAME/TRIP) HORSEPOWER VAPORTIGHT (NEMA 12) WEATHERPROOF KILOWATTS CIRCUIT BREAKER (FRAME/TRIP) M = WITH FULL FUNCTION METER A = WITH AMMETER MINIMUM CIRCUIT AMPERES WATERTIGHT STAINLESS MAIN CIRCUIT BREAKER STEEL (NEMA 4) MCC MOTOR CONTROL CENTER XFMR TRANSFORMER → METAL-CLAD DRAWOUT CIRCUIT BREAKER (FRAME/TRIP) SWITCH AND FUSE GROUND FAULT PROTECTION WIRING DEVICES KIRK-KEY INTERLOCK MOTOR STARTER OR CONTACTOR THE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO SINGLE RECEP. - 120V GROUNDING TYPE - STANDARD MH THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND MICROPROCESSOR BASED METERING EQUIPMENT EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL DUPLEX RECEP. - 120V GROUNDING TYPE - STANDARD MH OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS KILOWATT HOUR METER DUPLEX RECEP. - 120V GROUND FAULT TYPE - STANDARD MH OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS AMMETER DUPLEX RECEPTACLE WITH ONE BOSS SWITCHED OF THE ARCHITECTURAL OR ENGINEERING PROJECT VOLTMETER DUPLEX RECEP.-MH 42" TOILET; MH 48" UNFINISHED AREAS AMMETER SWITCH DOUBLE DUPLEX RECEP. - 120V GROUND. TYPE - STAND. MH VOLTMETER SWITCH SPECIAL RECEPTACLE - SEE NOTE ON DRAWING RI RI-ROUGH IN ONLY CURRENT TRANSFORMER (CT) CHIME, BELL POTENTIAL TRANSFORMER (PT) BUZZER HH GENERAL HORN — WALL MOUNTED DUAL, SINGLE —— G —— GROUND BUS PUSHBUTTON (QTY. OF CIRCLES = QTY. OF BUTTONS) ----- N ---- NEUTRAL BUS EPO - EMERGENCY POWER OFF PULL STATION ———— CABLE TERMINATOR TIMER SWITCH MH 4'-0" (SEE SPEC. FOR TIME INTERVAL) FILTER P PHOTOCELL TRANSIENT VOLTAGE SURGE SUPPRESSOR TRANSFORMER WIND TURBINE PH/WIND SYSTEM INVERTER ① PB JUNCTION AND PULL BOXES PV/WIIND SYSTEM COMBINER BOX JUNCTION BOX BY EQUIPMENT MANUFACTURER O— C ● CONDUIT UP; CONDUIT DOWN; CONDUIT UP AND DOWN FEEDER CONDUIT — HEAVY STRAIGHT LINE — (SEE RISER DIAGRAM) E EMERGENCY CONDUIT SYSTEM MARK DATE DESCRIPTION CONDUIT CONCEALED ABOVE CEILING OR IN WALL -MISCELLANEOUS CURVED LINE \_\_\_\_\_ CONDUIT CONCEALED IN OR BELOW FLOOR OR IN WALL CURVED LINE ------ CONDUIT EXPOSED - STRAIGHTLINE NNN EQUIPMENT OR PLUMBING FIXTURE DESIGNATION HOME RUN CONDUIT - SHORT STROKES INDICATE PHASE OR SWITCHED WIRES, LONG STROKES INDICATE NEUTRAL, LONG STROKES WITH DOT INDICATE GROUND CONDUCTORS, XXX SHEET CONTINUATION DESIGNATION ---|I GROUND --- BUSWAY (HORIZONTAL) (RISER INDICATION) RISER DESIGNATION (RISER NUMBER) BUSWAY (VERTICAL) (DETAIL NUMBER) DETAIL DESIGNATION (SHEET NUMBER WHERE DETAIL IS SHOWN) SHEET NUMBER WHERE SECTION IS DRAWN. SECTION IS DRAWN. **A/E CON. NO.** | GS06P04GYD0003 XX NOTES A/E TASK NO. 67 MODIFICATION NO. 3 CONS. CONTR. X REVISIONS **≤** CONS. WORK PRIME A/E TEAM FOUR ARCHITECTS, INC. SUB A/E CONSTR. CON. NAME ROBERT A. YOUNG FED. BLDG. 1222 SPRUCE STREET Ž|CITY/ST./ZIP | ST. LOUIS, MO 63103 BUILDING NO. | MO0106ZZ BUILDING NOs. FACILITY CODE RAY ARRA MECHANICAL - PROJECT WIND / PV PACKAGE **DESCRIPTION** PROJECT NO. | IMO00090 <sup>∑</sup>|GSA PM DENISE RYERKERK | SUBMISSION | SECOND SUB. 35% COMPLETE **SUB. DATE** 4/26/2010 DRAWING TITLE SYMBOL SHEET FILE NAME G-G002-IMO00090 FLOOR NO. Z DRAWN BY JAK DATE DRAFTED: 4/22/10 DRAWING NO. DISCIPLINE SHEET TYPE SEQUENCE SHEET 2 OF 5 PROPERTY OF THE UNITED STATES GOVERNMENT — FOR OFFICIAL USE ONLY. Do not remove this notice. Properly destroy documents when no longer needed.





**GENERAL NOTES:** 

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SUBMISSION | SECOND SUB. 35% COMPLETE

DISCIPLINE SHEET TYPE SEQUENCE SHEET 4 OF 5

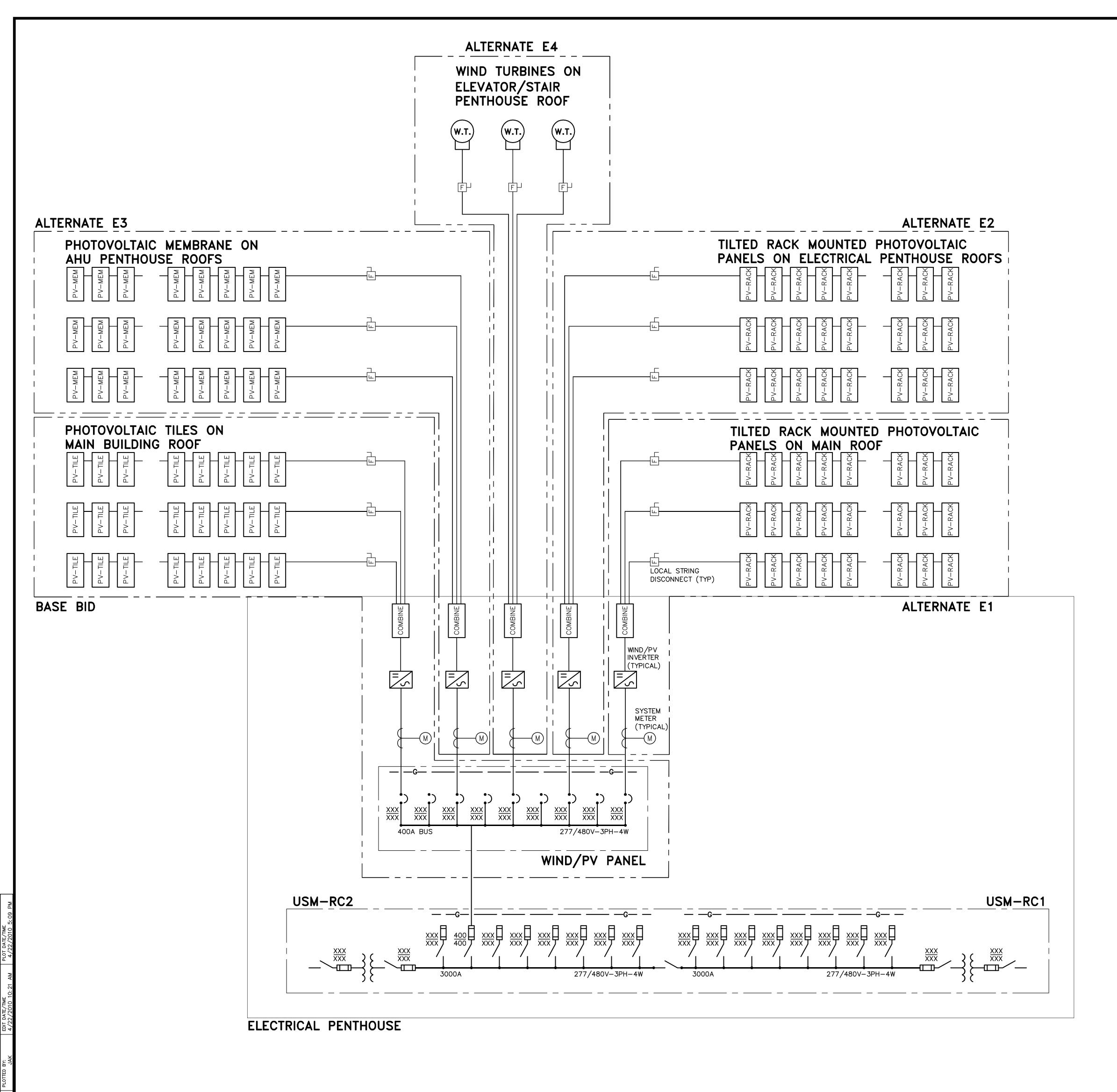
DRAWING TITLE | ELECTRICAL POWER

**FLOOR NO.** PENTHOUSE ROOF

**SUB. DATE** 4/26/2010

DRAWING NO.

FILE NAME EP-102-IMO00090



1 WIND/PV SYSTEM ELECTRICAL DNE-LINE DIAGRAM SCALEN, A.

## **GENERAL NOTES:**

- A. BASE BID TO INCLUDE SELF BALLASTED PHOTOVOLTAIC PANELS MOUNTED FLAT ON ROOF TO ALLOW WINDOW WASHING EQUIPMENT CABLE SUPPORTS TO BE ROUTED OVER PANELS TO WINDOW WASHING ACHORING SYSTEM AS REQUIRED. SYSTEM TO INCLUDE PHOTOVOLTAIC PANELS, INVERTERS, METERS, DISCONNECTS, CONDUIT, WIRES AND CABLES REQUIRED TO CONNECT SYSTEM TO EXISTING ELECTRICAL DISTRIBUTION SYSTEM
- B. ALTERNATE BID E1 TO INCLUDE PHOTOVOLTAIC PANELS MOUNTED ON TILTED RACK SYSTEM ATTACHED TO BUILDING STRUCTURAL SYSTEM AS REQUIRED. SYSTEM TO INCLUDE PHOTOVOLTAIC PANELS, INVERTERS, METERS, DISCONNECTS, CONDUIT, WIRES AND CABLES REQUIRED TO CONNECT SYSTEM TO EXISTING ELECTRICAL DISTRIBUTION SYSTEM
- C. ALTERNATE BID E2 TO INCLUDE PHOTOVOLTAIC PANELS MOUNTED ON SUPPORT SYSTEM ATTACHED TO BUILDING STRUCTURAL SYSTEM AS REQUIRED. SYSTEM TO INCLUDE PHOTOVOLTAIC PANELS, INVERTERS, METERS, DISCONNECTS, CONDUIT, WIRES AND CABLES REQUIRED TO CONNECT SYSTEM TO EXISTING ELECTRICAL DISTRIBUTION SYSTEM
- D. ALTERNATE BID E3 TO INCLUDE THIN FILM PHOTOVOLTAIC MEMBRANE INSTALLED ON EXISTING LIGHTWEIGHT AIR HANDLING SPACE ENCLOSURE ROOF. SYSTEM TO INCLUDE PHOTOVOLTAIC MEMBRANE, INVERTERS, METERS, DISCONNECTS, CONDUIT, WIRES AND CABLES REQUIRED TO CONNECT SYSTEM TO EXISTING ELECTRICAL DISTRIBUTION SYSTEM
- E. ALTERNATE BID E4 TO INCLUDE VERTICAL ACCESS WIND TURBINE WITH STRUCTURAL SUPPORT CAGES INSTALLED ON EXISTING STAIR/ELEVATOR PENTHOUSES. SYSTEM TO INCLUDE WIND TURBINE, INVERTERS, METERS, DISCONNECTS, CONDUIT, WIRES AND CABLES REQUIRED TO CONNECT SYSTEM TO EXISTING ELECTRICAL DISTRIBUTION SYSTEM

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F. EXACT QUANTITY OF PHOTOVOLTAIC TILES, PANELS AND MEMBRANES TO BE DETERMINED BY MANUFACTURER BASED ON AVAILABLE ROOF SPACE AS SHOWN ON FLOOR AND ROOF PLANS.

# **KEYED NOTES:**

X NOTE 1

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MARK DA	TE DESCRIPTION
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UB A/E ONSTR. CON.	
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UILDING NOs. ACILITY CODE	
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ROJECT ESCRIPTION	WIND / PV PACKAGE
ROJECT NO.	IMO00090
SA PM UBMISSION	DENISE RYERKERK SECOND SUB. 35% COMPLETE
UB. DATE	4/26/2010
RAWING TITLE ILE NAME	ELECTRICAL ONE-LINE EP-601-IMO00090
LOOR NO.	NA NA

DRAWING NO

SHEET 5 OF